Guruswamy Kumaraswamy

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Current Interests

My research is currently focused towards understanding the principles by which structure is controlled by self assembly. Current themes include:

- Synthesis and assembly in anisotropic liquid crystal matrices
- Plate-like anisotropic nanoparticles – self-assembly & nanocomposites
- Rheology and structure of two-phase (crystallizing) polymer melts

Education

- Ph.D., Chem. Engg., California Institute of Technology, USA, 2000.
- M.S., Chem. Engg., California Institute of Technology, USA, 1996.
- B.Tech., Chem. Engg., Indian Institute of Technology, Bombay, 1994.

Experience

- 2001-current: Scientist at NCL. My group investigates structure-property relations in polymers and colloids. We use a combination of rheology, home-built rheo-optics, X-ray and light scattering, microscopy and (through collaborations) solid state NMR to understand polymer phase transitions, aggregation in colloids and organization of colloid-surfactant mesophases. We use simple routes to prepare novel nanostructured materials and inorganic-organic hybrids. I have also been involved in technology development projects for industry.
- 2000-2001: VW Postdoctoral Fellow; Max Planck Institute for Colloids and Interfaces (Golm, Germany). Developed tunable photonic materials based on coated colloids; Multilayered polyelectrolyte assemblies based on weak polyelectrolytes.
- 1994-2000: Caltech, USA. Investigated the influence of processing-like flows on polymer crystallization. Based on my thesis work, I was nominated for the top student awards in Polymer Physics (Padden Prize, American Physical Society) and Applied Polymer Chemistry (ICI Award, American Chemical Society) in 2000.

Achievements

- Landau Award for Outstanding Performance (Caltech, 1995-1998)
- CSIR Young Scientist Award (2005)